



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,858	07/12/2006	Yusuke Fukuoka	900-556	7745
23117 7590 05/11/2009 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203				
EXAMINER				
FORD, NATHAN K				
ART UNIT		PAPER NUMBER		
1792				
MAIL DATE		DELIVERY MODE		
05/11/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/585,858

**Applicant(s)**

FUKUOKA ET AL.

**Examiner**

NATHAN K. FORD

**Art Unit**

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 3/5/09.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 10-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☒ Claim(s) 8 and 9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date 7/12/06, 3/23/07
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election*

Applicant's election without traverse of claims 1-9 in the reply filed on March 5, 2009, is acknowledged. Claims 10-15 are withdrawn.

### *Priority*

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on January 30, 2004. It is noted, however, that applicant has not filed a certified copy of the Japanese application as required by 35 U.S.C. 119(b).

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "relevant" in claim 7 is a relative term which renders the claim indefinite. Further, this term is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hassan et al., US 4,348,139, in view of Iwasaki et al., US 5,174,881.

Claims 1, 7: Hassan discloses a semiconductor processing apparatus comprising:

- A plurality of vacuum chambers for processing a substrate (4, 9-34; Fig. 1);
  - Wherein an exhaust device must be inherently connected to each chamber to effect a vacuum (9, 53-57);
- A guide plate arranged at the bottom of each vacuum chamber (Fig. 10b);

Art Unit: 1792

- o Wherein each plate has a plurality of gas emission holes (124) (5, 40ff; 9, 45-50);
- o Wherein a gas supply source must be present inherently to provide gas to the emission holes;
- A substrate mounted on the guide plate;
- A conveying arm (52) attached to a rotatable section (30) which facilitates wafer rotation and incline (4, 58ff; 7, 46-65; 9, 13-35);
- Wherein a shutter (123) is disposed between the vacuum chambers (9, 45-50);
- A mechanism which controls (9, 45-65):
  - o The opening of the shutter;
  - o The emission of gas through the emission holes;
  - o The movement of the tray, whereby the tray is floated by the emitted gas, from the guide plate of one chamber to the guide plate of an adjacent chamber via the conveying arm.

Hassan does not interpose a tray between the guide plate and the substrate as required by the applicant's claim. Hence, Iwasaki is cited in supplementation (Fig. 11). The secondary reference elaborates a semiconductor processing system wherein multiple wafers (4) are disposed atop a tray (30) which is conveyed along a track through a plurality of vacuum chambers (18, 57ff). This arrangement augments throughput by increasing the number of wafers that can be transported per unit time. Given this teaching, it would have been obvious to one of ordinary skill reconfigure the system of Hassan such that multiple wafers are conveyed on a single, floatable tray to accelerate processing.

Claim 2: As described above, the movements of the shutter and rotatable section are controlled. Further, the air provided through the holes of the conveyance track is carefully modulated, and to achieve such control each structural feature recited by the applicant (supply source, valve, detecting part, etc.) must be inherently present within the system of Hassan (5, 40ff; 9, 13ff).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hassan in view of Iwasaki and in further view of Rigali et al., US 2004/0211516.

The previously cited prior art does not articulate a locking means. Rigali, however, discloses a track for workpiece conveyance outfitted with guide rails which ensure the alignment of the workpieces traversing the track [0059]. Given this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate guide rails within Hassan's apparatus to prevent any undesirable sideways movement (relative to the intended direction of conveyance) of the tray.

Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hassan in view of Iwasaki and in further view of Baxter et al., US 2002/0139481.

The drive section of Hassan does not avail pulleys and wire to beget the rotation and incline of the rotatable sections. Even so, as Baxter demonstrates, it is well-known in the art to employ pulley mechanisms in the context of wafer conveyance. Specifically, Barraud employs two pulleys (70) to facilitate the manipulation of a substrate support arm and the rotation of substrate itself [0034, 37]. As would be apparent to one of ordinary skill, it would have been obvious to control the tension of the pulley wire to direct the movements of the conveying arm. Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to manipulate the conveyance arm of Hassan via pulley mechanisms to achieve the predictable result of transporting and rotating a substrate.

*Allowable Subject Matter*

Claims 8 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant's claim 8 recites at least two engagement part formed on the tray so as to engage the conveying arm as the tray is being transported. Hassan does not disclose a tray formed with engagement parts, nor is the conveying arm articulated by the primary reference intended to engage any component traversing the surface of the air track. Rather, Hassan's conveyance arm engages with an undersurface of the rotatable section to permit its rotation and incline. As the intended purpose of Hassan's system is to transport wafers merely by the use of air pressure, that is, transport without the requirement of direct engagement between a conveyance arm and a substrate, the primary reference teaches away from any combination that would incorporate a mechanical component which directly contacts an element traversing the topside of the air track. For these reasons, the prior art, neither alone nor in combination, anticipates the features recited by applicant's claims 8 and 9.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan K. Ford whose telephone number is 571-270-1880. The examiner can normally be reached on M-F, 8:30-5:00 EDT. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland, can be reached at 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/N. K. F./

Application/Control Number: 10/585,858

Page 5

Art Unit: 1792

Examiner, Art Unit 1792

/Michael Cleveland/

Supervisory Patent Examiner, Art Unit 1792